

REMARKS

The Examiner's time and consideration during the telephone interview on April 1, 2003 are greatly appreciated. During the interview, the limitations of independent claim 5 were compared to the disclosure of the cited prior art Daly. A more detailed description of the subject matter of the interview is included below.

The Office Action mailed December 4, 2002 has been reviewed and carefully considered. Claims 5 and 7 have been amended. Claims 5-8 are pending in this application, with claims 5 and 7 being the only independent claims. Reconsideration of the above-identified application, as herein amended and in view of the following remarks, is respectfully requested.

In the Office Action mailed on December 4, 2002, claims 5-8 stand rejected under 35 U.S.C. §112, second paragraph, as indefinite. More specifically, the Examiner states that phrase "non-critical temperature" is not clear. The claims and specification have been amended to remove the unclear term and to recite that the temperature range 260°C to 280°C is below the recrystallization temperature of the rolled strip and that the temperature range 315°C to 320°C is above the recrystallization temperature of the rolled strip. Support for this limitation is found in the specification on page 8, lines 10-14. In view of the above amendments and remarks, it is respectfully requested that the rejection of claims 5-8 under 35 U.S.C. §112, now be withdrawn.

Claims 5 and 6 stand rejected under 35 U.S.C. §103 as obvious over U.S. Patent No. 5,362,340 (Daly). Claims 5 and 6 stand rejected under 35 U.S.C. §103 as obvious over Daly in view of JP 7-041896 (JP '896). Claims 7 and 8 stand rejected under 35 U.S.C. §103 as obvious over Daly in view of U.S. Patent No. 5,548,882 (Windhaus).

Independent claim 5, as amended, recites " finish rolling the strip from a coil to a coil in a reversing roll stand immediately after the roughing stage in a number of hot rolling passes",

"suppressing recrystallization of the rolled strip by controlled temperature management of the strip so that last of the hot rolling passes are carried out without recrystallization on the reversing roll stand from coil to coil in a temperature range of 260°C to a maximum of about 280°C, which is below a recrystallization temperature of the rolled strip" and "feeding each finished coil to a continuous pusher type furnace for heat treating the finished coils to a temperature above the recrystallization temperature of the rolled strip within a range including 315°C to 320°C, as a final step for producing the aluminum strip for can making".

Daly discloses a method for producing aluminum can sheet having low earing characteristics. According to Daly, an ingot is first heated and then subjected to hot rolling in a reversible hot mill to produce an intermediate gauge sheet (see col. 3, lines 22-28). Daly further discloses that the intermediate gauge sheet should exit the hot roll at a temperature of about 249°C to 405°C (col. 3, lines 31-33). At col. 3, lines 36-46 Daly states that the recrystallization should be minimized or reduced.

Daly further teaches that if the exit temperature of the intermediate gauge strip is lower than 332°C, annealing may be performed. If the exit temperature of the intermediate gauge strip is greater than 332°C, then self annealing may occur (see col. 3, lines 47-57). After the annealing, if any, Daly requires further cold rolling to the final gauge sheet (col. 3, lines 58-62).

Independent claim 5 is allowable over Daly for the following reasons: (1) Daly fails to teach the requirement of maintaining the temperature within 260°C to 280°C in a last roll pass during finish rolling as recited in independent claim 5, and (2) Daly also fails to teach or suggest that the step of heating above recrystallization is the final step for forming the strip for can making.

Regarding the first reason, independent claim 5 requires that the last of the hot rolling passes for finish rolling the strip are controlled within a temperature range of 260°C to

280°C. Daly teaches that the intermediate stage of rolling is performed as hot rolling and that finish rolling involves cold rolling. Accordingly, Daly fails to teach or suggest temperature control in the last roll pass of the finish rolling. Rather Daly discloses a range of temperature for intermediate rolling which produces the intermediate sheet.

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Regarding the second reason, Daly teaches that after the intermediate coil is produced, the coil may be subject to annealing, depending on the output temperature of the intermediate coil. After annealing, if required, the intermediate sheet is cold rolled to a final gauge. Since Daly teaches the step of cold rolling after the step of hot rolling and, if required, annealing, Daly fails to teach or suggest that step of "feeding each finished coil to a continuous pusher type furnace for heat treating the finished coils to a temperature above the recrystallization temperature of the rolled strip within a range including 315°C to 320°C, as a final step for producing the aluminum strip for can making" (emphasis added).

In view of the above amendments and remarks, it is respectfully submitted that independent claim 5 is allowable over Daly.

JP '896 fails to teach or suggest what Daly lacks. JP '896 discloses production of an aluminum alloy sheet in which warm rolling is performed after the step of hot rolling. This still fails to teach the claimed temperature control during the last roll pass and the step of heat treating as a final step, as recited in independent claim 5. Accordingly, it is respectfully submitted that independent claim 5 is allowable over Daly in view of JP '896.

Independent claim 7 recites "means for finish rolling the rough strip in a number of hot rolling passes so that last of the hot rolling passes occur without recrystallization in a temperature range of 260°C to a maximum of about 280°C, which is below a recrystallization temperature of the rolled strip" and "means for heat treating the finish coiled strip to a temperature


above the recrystallization temperature of the rolled strip within a range including 315°C to 320°C as a final production stage for producing the aluminum strip for can making".

As stated above Daly fails to teach or suggest (1) finish rolling in a number of hot rolling passes, wherein the last pass is within a temperature range of 260°C to 280°C and (2) heat treating as a last step of production.

Windhaus fails to teach or suggest what Daly lacks. Windhaus discloses a thin-slab casting installation which includes a pusher-type pallet system. However, Windhaus fails to teach the above recited limitations of independent claim 7. In view of the above amendments and remarks, it is respectfully submitted that independent claim 7 is allowable over Daly in view of Windhaus.

The application is deemed to be in condition for allowance and notice to that effect is solicited.

Respectfully submitted,
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